

Larry Fairchild
Packaging Corporation of America
520 South First Street
Gas City, Indiana 46933

Re: Registered Construction and Operation Status,
053-12891-00056

Dear Mr. Fairchild:

The application from Packaging Corporation of America, received on October 24, 2000, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following corrugated boxes manufacturing plant, located at 520 South First Street, Gas City, Indiana, 46933 is classified as registered:

- (a) The proposed installation of twenty-eight (28) natural gas-fired space heaters, each has a heat input capacity of 0.40 million British Thermal Units per hour (mmBtu/hr);
- (b) Two (2) natural gas fired boilers, identified as BL1 and BL2, each constructed in 1987, with a maximum heat input capacity of 10.50 mmBtu/hr and 17.25 mmBtu/hr, respectively, exhausting through stack ID # 001 and 002, respectively;
- (c) One (1) application of inks station, identified as INK, with a maximum rate of water-based inks of 17.1 pounds per hour, unprinted corrugated sheets of 650 pounds per hour, and letterpress inks of 0.34 pounds per hour, exhausting through the general building ventilation system, identified as ID # 003, consisting of the following equipment:
 - (1) Four (4) flexographic printing presses, identified as # 281, 317, 318, and 324, each with a maximum line speed of 483, 432, 520, and 583 feet per minute, respectively, and a maximum print width of 60, 37.5, 37.5, and 48.5 inches, respectively;
 - (2) Two (2) letter presses, identified as # 188 and 122, each with a maximum line speed of 183 and 246 feet per minutes, respectively, and a maximum print width of 37.5 and 42 inches, respectively;
- (d) One (1) application of glues/adhesive station, identified as G/A, with a maximum rate of 16,000 pounds of glue/adhesive per hour, exhausting through the general building ventilation system, identified as ID # 003;
- (e) One (1) starch storage silo, identified as S1, with a maximum storage capacity of 320,000 pounds of starch, utilizing a starch silo filtering system for particulate matter control, exhausting through stack ID # 004;
- (f) One (1) paper scrap collection cyclone/baler, identified as PAP, with a maximum rate of 3,000 pounds of paper per hour, utilizing a paper separation cyclone for particulate matter control, exhausting through stack ID # 005.

The following conditions shall be applicable:

1. Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:
 - (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period.
2. Pursuant to 326 IAC 6-2-4 (Emission Limitations for Facilities Specified in 326 IAC 6-2-1(c)), particulate emissions from the two (2) natural gas fired boilers, shall be limited as follows:

Boiler ID	Heat Input Capacity	PM Emission Limit (pound/million Btu)
BL1	10.5	0.46
BL2	17.25	0.46

The PM limits shall be determined using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}} \quad \text{where: } Pt = \text{Pounds of particulate matter emitted per mmBtu heat input.}$$

$Q = \text{Total source maximum operating capacity rating in mmBtu per hour.}$

3. Pursuant to 326 IAC 6-3 (Process Operations), the particulate matter (PM) emissions from the starch silo and the paper scrap collection cyclone/baler station shall be limited as follows:

Facility	Process Weight Rate (ton/hour)	PM Emission Limit (pound/hour)
Starch silo, S1	8.0	16.5
Paper scrap collection cyclone/baler station, PAP	1.5	5.37

The PM limits shall be determined using the following equation:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and}$$

$P = \text{process weight rate in tons per hour}$

The starch silo filtering system and the paper separation cyclone shall be in operation at all times the starch silo and the paper scrap collection cyclone/baler are in operation, in order to comply with this limit.

This registration is a revised registration issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Management that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

**Compliance Data Section
Office of Air Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015**

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Management (OAM) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

APD

cc: File - Grant County
Grant County Health Department
Air Compliance - Jim Thorpe
Permit Tracking - Janet Mobley
Technical Support and Modeling - Michele Boner
Compliance Data Section - Karen Nowak

Registration Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3).

Company Name:	Packaging Corporation of America
Address:	520 South First Street
City:	Gas City
Authorized individual:	Larry Fairchild
Phone #:	(765) 674-9781
Registration #:	053-12891-00056

I hereby certify that **Packaging Corporation of America** is still in operation and is in compliance with the requirements of Registration **053-12891-00056**.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management (IDEM) Office of Air Management

Technical Support Document (TSD) for Registered Emission Units

Source Background and Description

Source Name: Packaging Corporation of America
Source Location: 520 South First Street, Gas City, Indiana 46933
County: Grant
Registration No.: 053-12891-00056
SIC Code: 2653
Permit Reviewer: Aida De Guzman

The Office of Air Management (OAM) has reviewed an application from Packaging Corporation of America relating to the operation of a corrugated boxes manufacturing plant, which consists of the following equipment:

- (a) The proposed installation of twenty-eight (28) natural gas-fired space heaters, each has a heat input capacity of 0.40 million British Thermal Units per hour (mmBtu/hr);
- (b) Two (2) natural gas fired boilers, identified as BL1 and BL2, each constructed in 1987, with a maximum heat input capacity of 10.50 mmBtu/hr and 17.25 mmBtu/hr, respectively, exhausting through stack ID # 001 and 002, respectively;
- (c) One (1) application of inks station, identified as INK, with a maximum rate of water-based inks of 17.1 pounds per hour, unprinted corrugated sheets of 650 pounds per hour, and letterpress inks of 0.34 pounds per hour, exhausting through the general building ventilation system, identified as ID # 003, consisting of the following equipment:
 - (1) Four (4) flexographic printing presses, identified as # 281, 317, 318, and 324, each with a maximum line speed of 483, 432, 520, and 583 feet per minute, respectively, and a maximum print width of 60, 37.5, 37.5, and 48.5 inches, respectively;
 - (2) Two (2) letter presses, identified as # 188 and 122, each with a maximum line speed of 183 and 246 feet per minutes, respectively, and a maximum print width of 37.5 and 42 inches, respectively;
- (d) One (1) application of glues/adhesive station, identified as G/A, with a maximum rate of 16,000 pounds of glue/adhesive per hour, exhausting through the general building ventilation system, identified as ID # 003;
- (e) One (1) starch storage silo, identified as S1, with a maximum storage capacity of 320,000 pounds of starch, utilizing a starch silo filtering system for particulate matter control, exhausting through stack ID # 004; and
- (f) One (1) paper scrap collection cyclone/baler, identified as PAP, with a maximum rate of 3,000 pounds of paper per hour, utilizing a paper separation cyclone for particulate matter control, exhausting through stack ID # 005.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on October 24, 2000.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations six (6) pages.

Potential To Emit for the Source

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Emissions (ton/yr)
PM	14.89
PM10	15.19
SO ₂	0.00
VOC	12.55
CO	14.3
NOx	17.1

Hazardous Air Pollutants	Emissions (tons/year)
Glycol Ethers	1.68
Benzene	1.03×10^{-4}
Dichlorobenzene	5.88×10^{-5}
Formaldehyde	3.679×10^{-3}
Hexane	8.83×10^{-2}
Toluene	1.668×10^{-4}
Lead	2.45×10^{-5}

Cadmium	5.39×10^{-5}
Chromium	6.86×10^{-5}
Manganese	1.86×10^{-5}
Nickel	1.03×10^{-4}
Worst Single HAP	1.68
Combined HAPs	1.77

- (a) The existing source is re-registered pursuant to 326 IAC 2-5.5, since its potential to emit particulate matter (PM) or particulate matter less than ten microns (PM10) is greater than five (5) tons per year but less than 25 tons per year; and
- (b) The source potential to emit oxides of nitrogen (NO_x) or volatile organic compounds (VOC) is greater than ten (10) tons per year but less than 25 tons per year.

County Attainment Status

The source is located in Grant County.

Pollutant	Status (attainment, maintenance attainment, or unclassifiable; severe, moderate, or marginal nonattainment)
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	attainment
CO	attainment
Lead	not determined

- (a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Grant County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Grant County has been classified as attainment or unclassifiable for all the other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (c) Fugitive Emissions
 Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive PM emissions are not counted toward determination of PSD and Emission Offset applicability.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons/year.

This existing source is being re-registered based on the new permitting rule, 326 IAC 2

Federal Rule Applicability

- (a) The two (2) natural gas fired boilers are not subject to 326 IAC 12, New Source Performance Standards, (NSPS) (40 CFR Part 60.40c, Subpart Dc). The two boilers commenced construction before the applicability date of June 9, 1989.
- (b) The four (4) flexographic printing presses and the two (2) letter printing presses are not subject to 326 IAC 12, New Source Performance Standards, (NSPS) (40 CFR Part 60.430, Subpart QQ). The printing presses are not publication rotogravure printing presses.
- (c) The four (4) flexographic printing presses are not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 63.820, Subpart KK). The printing presses have a single and a total HAP emissions of less than 10 and 25 tons per year, respectively, therefore, are not a major source of HAPs.

State Rule Applicability - Entire Source

- (a) 326 IAC 2-2 (Prevention of Significant Deterioration, PSD) and 40 CFR 52.21
This source is not subject to the requirements of 326 IAC 2-2 (PSD), because the source is not one of the 28 listed source categories and the potential to emit for all regulated pollutants are less than 250 tons per year.
- (b) 326 IAC 2-6 (Emission Reporting)
This source is not subject to 326 IAC 2-6 (Emission Reporting), because the source emits less than 100 tons/yr of each criteria pollutant.
- (c) 326 IAC 5-1 (Visible Emissions Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:
 - (1) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

- (a) 326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating)
- (1) Pursuant to 326 IAC 6-2-4 (Emission Limitations for Facilities Specified in 326 IAC 6-2-1(c)), particulate emissions from the two (2) natural gas fired boilers will be limited as follows:

Boiler ID	Heat Input Capacity	PM Emission Limit (pound/million Btu)
BL1	10.5	0.46
BL2	17.25	0.46

The above PM limits were determined using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

where: Pt = Pounds of particulate matter emitted per mmBtu heat input.
Q = Total source maximum operating capacity rating in mmBtu per hour.
Q = 27.8 mmBtu/hr

$$Pt = \frac{1.09}{(27.8)^{0.26}} = 0.46 \text{ pound per mmBtu heat input}$$

Particulate matter emissions from the two (2) natural gas fired boilers shall not exceed 0.46 pounds per mmBtu heat input. Uncontrolled particulate matter emissions from the two (2) natural gas fired boilers are 0.01 pounds per mmBtu heat input, therefore, these boilers will comply with 326 IAC 6-2-4.

- (2) The proposed twenty-eight (28) space heaters are not subject to 326 IAC 6-2, because they are not sources of indirect heating.
- (b) 326 IAC 6-3 (Process Operations)
- Pursuant to 326 IAC 6-3 (Process Operations):
- (1) The particulate matter (PM) from the starch silo shall be limited by the following:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where: } E = \text{rate of emission in pounds per hour and}$$

P = process weight rate in tons per hour
P = 16,000 pounds per hour = 8 tons per hour

$$E = 4.10 (8)^{0.67}$$

E = 16.51 pounds per hour

The starch silo filtering system shall be in operation at all times the starch silo is in operation, in order to comply with this limit.

- (2) The particulate matter (PM) from the paper scrap collection cyclone/baler station shall be limited by the following:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour} \\ P = 3,000 \text{ pounds per hour} = 1.5 \text{ tons per hour}$$

$$E = 4.10 (1.5)^{0.67} \\ E = 5.37 \text{ pounds per hour}$$

The paper separation cyclone shall be in operation at all times the paper scrap collection cyclone/baler is in operation, in order to comply with this limit.

- (c) 326 IAC 8-5-5 (Graphic Arts Operation)
The four (4) flexographic printing presses are not subject to 326 IAC 8-5-5 (Graphic Arts Operation). This section applies to packaging rotogravure, publication rotogravure, and flexographic printing sources, that were constructed after November 1, 1980 and are located anywhere in the state, with potential emissions of twenty-five (25) tons per year or more of volatile organic compounds. The four (4) flexographic printing presses have potential emissions of less than twenty-five (25) tons per year, therefore, are not subject to 326 IAC 8-5-5 (Graphic Arts Operation).
- (d) 326 IAC 8-1-6 (New Facilities; General Reduction Requirements)
This source has potential VOC emissions of less than 25 tons per year, therefore 326 IAC 8-1-6 (New Facilities; General Reduction Requirements) does not apply.
- (e) 326 IAC 8 (Volatile Organic Sources)
There are no other rules in article 326 IAC 8 that would apply to this corrugated boxes manufacturing plant.
- (f) 325 IAC 2-4.1-1 (New Source Toxics Control)
This rule applies to sources who construct or reconstruct a major source of hazardous air pollutants (HAP) after July 27, 1997. This corrugated boxes manufacturing plant is not subject to 326 IAC 2-4.1-1 because it is not a major source for HAP, nor major for any criteria pollutant.

Conclusion

The construction of this manufacturing plant for corrugated boxes will be subject to the conditions of the attached **Registration No. 053-12891-00056**.

Appendix A: Emission Calculations

Company Name: Packaging Corporation of America
Address City IN Zip: 520 South First Street, Gas City, Indiana 46933
Registration No.: 053-12891-00056
Reviewer: Aida De Guzman
Date Application Received: 10/24/00

Uncontrolled Potential Emissions (tons/year)							
Emissions Generating Activity							
Pollutant	Proposed 28 Natural Gas Space Heaters	Two (2) Natural Gas Fired Boilers	Application of Inks Station	* Application of Glues/Adhesives Station	Starch Silo	Paper Scrap Collection Cyclone/Baler Station	TOTAL
PM	0.10	0.90	0.00	0.00	0.75	13.14	14.89
PM10	0.40	0.90	0.00	0.00	0.75	13.14	15.19
SO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx	4.90	12.20	0.00	0.00	0.00	0.00	17.1
VOC	0.30	0.70	10.02	1.53	0.00	0.00	12.55
CO	4.10	10.20	0.00	0.00	0.00	0.00	14.3
total HAPs	0.00	0.20	1.68	0.75	0.00	0.00	2.63
worst case single HAP	0.00	0.20	0.44	0.75	0.00	0.00	1.39
Total emissions based on rated capacity at 8,760 hours/year.							
Controlled Potential Emissions (tons/year)							
Emissions Generating Activity							
Pollutant	Proposed 28 Natural Gas Space Heaters	Two (2) Natural Gas Fired Boilers	Application of Inks Station	* Application of Glues/Adhesives Station	Starch Silo	Paper Scrap Collection Cyclone/Baler Station	TOTAL
PM	0.10	0.90	0.00	0.00	0.75	13.14	14.89
PM10	0.40	0.90	0.00	0.00	0.75	13.14	15.19
SO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx	4.90	12.20	0.00	0.00	0.00	0.00	17.1
VOC	0.30	0.70	10.02	1.53	0.00	0.00	12.55
CO	4.10	10.20	0.00	0.00	0.00	0.00	14.3
total HAPs	0.00	0.20	1.68	0.75	0.00	0.00	2.63
worst case single HAP	0.00	0.20	0.44	0.75	0.00	0.00	1.39
Total emissions based on rated capacity at 8,760 hours/year, after control.							
* Emissions are reported by the source. Based on actual production of the facilities.							

Compliance with 326 IAC 6-2-4 (Particulate Emission Limitation for Sources of Indirect Heating)

PM emission limit from 326 IAC 6-2-4

$$\text{emissions (lb/MMBtu)} = 1.09 / (Q^{0.26})$$

Q =

27.80 MMBtu per hour

PM emissions =**0.46 pounds per MMBtu =****55.91 tons/yr**

Boiler Unit ID #BL1 and BL2

The following calculation demonstrates compliance with the allowable PM emission limit of 0.46 lb/MMBtu pursuant to 326 IAC 6-2-4:

num heat input capacity

27.80 MM Btu per hour

PM emissions =**0.01 pound per MM Btu WILL COMPLY**

Methodology

$$\text{PM emissions} = [(\text{PM emission from worst case uncontrolled fuel emission}) * 2000 \text{ lb/ton}] / [8760 \text{ hours} * \text{maximum heat input capacity}]$$

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boilers (#1 and 2)

Page 2 of 6 TSD App A

Company Name: Packaging Corporation of America
Address City IN Zip: 520 South First Street, Gas City, Indiana 46933
Registration No.: 053-12891-00056
Reviewer: Aida De Guzman
Date Application Received: 10/24/00

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

27.8

243.5

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
	Emission Factor in lb/MMCF			100.0	5.5	84.0
	1.9	7.6	0.6	**see below		
Potential Emission in tons/yr	0.2	0.9	0.1	12.2	0.7	10.2

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 3 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boilers (#1 and 2)
HAPs Emissions

Page 3 of 6 TSD App A

Company Name: Packaging Corporation of America
Address City IN Zip: 520 South First Street, Gas City, Indiana 46933
Registration No.: 053-12891-00056
Reviewer: Aida De Guzman
Date Application Received: 10/24/00

HAPs - Organics

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	2.557E-04	1.461E-04	9.132E-03	2.192E-01	4.140E-04

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	6.088E-05	1.339E-04	1.705E-04	4.627E-05	2.557E-04

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boilers (#1 and 2)

Page 4 of 6 TSD App A

Proposed 28 @ 0.4 mmBtu/hr
space heaters

Company Name: Packaging Corporation of America
Address City IN Zip: 520 South First Street, Gas City, Indiana 46933
Registration No.: 053-12891-00056
Reviewer: Aida De Guzman
Date Application Received: 10/24/00

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

11.2

98.1

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
	Emission Factor in lb/MMCF	Emission Factor in lb/MMCF	Emission Factor in lb/MMCF	Emission Factor in lb/MMCF	Emission Factor in lb/MMCF	Emission Factor in lb/MMCF
	1.9	7.6	0.6	100.0	5.5	84.0
				**see below		
Potential Emission in tons/yr	0.1	0.4	0.0	4.9	0.3	4.1

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

**Appendix A: Emissions Calculations
VOC From Printing Press Operations**

Company Name: Packaging Corporation of America
Address City IN Zip: 520 South First Street, Gas City, Indiana 46933
Registration No.: 053-12891-00056
Reviewer: Aida De Guzman
Date Application Received: 10/24/00

THROUGHPUT			
Press I.D.	MAXIMUM LINE SPEED (FEET/MIN)	MAXIMUM PRINT WIDTH (INCHES)	MMin^2/YEAR
Letter Press 118	47.4	37.5	11,211
Letter Press 122	64.2	42	17,007
Flexographic Printing Press 281	125.7	60	47,569
Flexographic Printing Press 317	112.4	37.5	26,585
Flexographic Printing Press 318	134.6	37.5	31,836
Flexographic Printing Press 324	152.6	48.5	46,680

* INK VOCS					
Ink Name Press Id	Maximum Coverage '(lbs/MMin^2)	Weight % Volatiles	Flash Off %	Throughput (MMin^2/Year)	Emissions** (TONS/YEAR)
Letter Press 118	1.74	30.00%	100.00%	11,211	2.93
Letter Press 122	1.74	30.00%	100.00%	17,007	4.44
Flexographic Printing Press 281	1.74	2.00%	100.00%	47,569	0.83
Flexographic Printing Press 317	1.74	2.00%	100.00%	26,585	0.46
Flexographic Printing Press 318	1.74	2.00%	100.00%	31,836	0.55
Flexographic Printing Press 324	1.74	2.00%	100.00%	46,680	0.81

Total VOC Emissions =	10.02 Ton/yr
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* All inks used are mutually exclusive, Worst Case VOC emissions are from Ink 103 Yellow.

** VOC (Tons/Year) = Maximum Coverage pounds per MMin^2 * Weight % volatiles (weight % of water & organics - weight % of water = weight % organics) * Flash off * Throughput * 1 Ton per 2000 pounds

METHODOLOGY

Throughput = Maxium line speed feet per minute * Convert feet to inches * Maximum print width inches * 60 minutes per hour * 8760 hours per year = MMin^2 per Year

VOC = Maximum Coverage pounds per MMin^2 * Weight percentage volatiles (water minus organics) * Flash off * Throughput * Tons per 2000 pounds = Tons per Year

NOTE: HEAT SET OFFSET PRINTING HAS AN ASSUMED FLASH OFF OF 80%. OTHER TYPES OF PRINTERS HAVE A FLASH OFF OF 100%.

(Source -OAQPS Draft Guidance, "Control of Volatile Organic Compound Emissions from Offset Lithographic Printing (9/93))

Appendix A: Emission Calculations**HAP Emission Calculations**

Company Name: Packaging Corporation of America
Address City IN Zip: 520 South First Street, Gas City, Indiana 46933
Registration No.: 053-12891-00056
Reviewer: Aida De Guzman
Date Application Received: October 24, 2000

Press ID	Material	Maximum Printing Throughput (MMin ² /yr)	Maximum Coverage (lbs/MMin ²)	Weight % Glycol Ethers	Glycol Ethers Emissions (ton/yr)
118	Ink	11,211	1.74	1.07%	0.10
122	Ink	17,007	1.74	1.07%	0.16
281	Ink	47,569	1.74	1.07%	0.44
317	Ink	26,585	1.74	1.07%	0.25
318	Ink	31,836	1.74	1.07%	0.30
324	Ink	46,680	1.74	1.07%	0.43
Total State Potential Emissions					1.68

METHODOLOGY

* All inks used are mutually exclusive, Worst Case HAP emissions are from Ink 2627U Purple.

HAPS emission rate (tons/yr) = Maximum Throughput (MMin²/yr) * Maximum Coverage (lbs/MMin²) * Weight % HAP * (1ton/2000lbs)